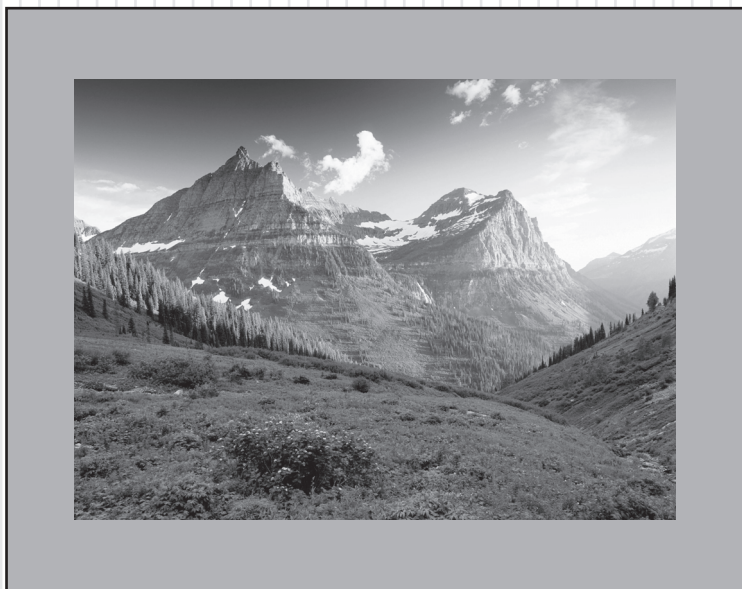


*Montana*  
*Comprehensive Assessment*  
*System (MontCAS, Phase 2)*  
*Criterion-Referenced Test (CRT)*

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE  
READING, GRADE 5

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# Reading Session 1

*Not all houses are built with the same materials. Read this article about earthen bricks and then answer the questions that follow.*

## **Mud-Pie\* Palaces**

*by Judith G. Keusler*



WHAT DO THE Great Wall of China, the Mission San Juan Capistrano, and the American pioneer sod house have in common? They all have mud walls!

Adobe, sod, rammed earth, and puddled mud are all forms of earthen brick. Since this natural building material has been used in almost every country in the world, variations have emerged to make it suitable to different climates. For example, sod bricks were often used in home construction in the extreme climatic conditions of the prairie states. Adobe bricks, on the other hand, were more suited to dry, hot climates because they require several days to cure in the sun. Adobe would not be a suitable building material where it is cool and damp. In rainy climates, damp earth is packed into forms and referred to as rammed earth. Earlier portions

of the Great Wall of China were built using a form of rammed-earth construction. Damp earth can also be hand-shaped to create a wall (puddled mud). Although there are differences, all of these methods utilize the same basic materials: dirt and water.

Adobe bricks, which are mud with sand and straw added, have been used for centuries to construct everything from the poorest hut to magnificent mansions. Indian tribes in New Mexico and Arizona constructed whole adobe villages called pueblos from this material, and churches, schools, and missions have all been constructed with adobe brick. Adobe is inexpensive and environmentally friendly, it does not require expensive equipment, it does not burn easily, and there is an endless supply of building material right under our feet.

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\*Mud-Pie: a mass of mud that has been molded into the shape of a pie

Building an entire house with adobe bricks is long and tedious work. But making one adobe brick can be a fun project, and the materials needed are inexpensive and easy to find. So roll up your sleeves and make your own adobe brick—just as the American pioneers and Native American tribes did long ago!

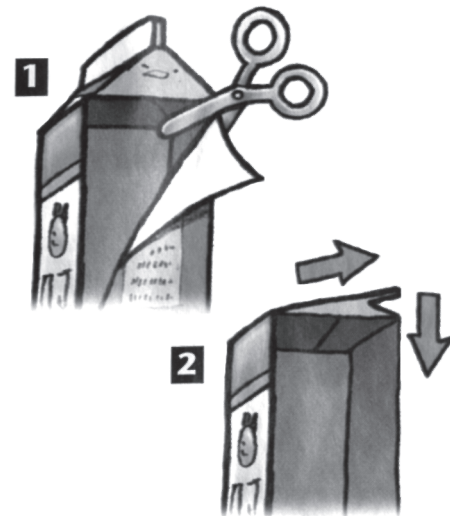
**What You'll Need:**

half-gallon orange-juice or milk carton (the waxed-cardboard rectangular kind)  
scissors  
tape  
a gallon bucket  
dirt  
sand  
straw or dried grass  
a stick  
water

**What to Do:**

1. Take empty half-gallon orange-juice carton and cut one long side from it.
2. Cut and flatten the folded spout end, then tape the carton firmly into a rectangular shape.
3. Fill the bucket  $\frac{1}{2}$  full of dirt.
4. Add sand until the bucket is  $\frac{3}{4}$  full.
5. Add straw or dried grass (approximately  $\frac{1}{8}$  bucket) cut into 2- to 3-inch pieces.
6. Thoroughly mix the dry materials with a wooden stick that will comfortably reach to the bottom of the bucket.
7. Add enough water to make a doughlike consistency. Add the water a little at a time until you can easily work with the mixture.
8. Pack the brick mixture into the carton, filling it about  $\frac{2}{3}$  full.
9. When your brick is firm enough to maintain a brick shape (approximately 1 day), carefully remove it from the carton.
10. Place your brick in a dry, sunny place and turn it occasionally as it dries. A completely dry brick is uniform in color, inside and out. The drying process, called curing, may take several weeks.

The amounts of dirt, sand, straw or dried grass, and water may vary widely, depending on the type of soil you have. For example, if you have soil with high clay content, you may need to add more sand or straw. If your first brick is not as strong as you'd like or it cracks when it dries, adjust the amount of materials and try again. Finding the right mixture for your area is part of the challenge that adobe builders have faced for centuries.



45. Explain the advantages and disadvantages of building with adobe bricks. Use information from the article to support your answer.

### Scoring Guide

Score	Description
4	Response provides a thorough explanation of the advantages and disadvantages of building with adobe bricks. Explanation includes relevant supporting information from the article.
3	Response provides an explanation of the advantages and disadvantages of building with adobe bricks. Explanation includes supporting information from the article that lacks specificity, relevance, and/or development.
2	Response provides a partial explanation of the advantages and/or disadvantages of building with adobe bricks. Explanation includes limited and/or partially correct information from the article and/or is partially correct.
1	Response makes a vague or minimal statement about the advantages and disadvantages of building with adobe bricks.
0	Response is totally incorrect or irrelevant.
Blank	No response.

### Scoring Notes

#### Advantages:

- Adobe bricks are inexpensive.
- Adobe bricks are environmentally friendly.
- Adobe bricks do not require expensive equipment.
- Adobe bricks do not burn easily.
- There is an endless supply right under our feet.

#### Disadvantages:

- Building with the bricks takes a long time. Each brick takes several days to cure in the sun.
- Building with the bricks is tedious work.
- Adobe bricks can only be built within a warm, dry climate. Building with them in a cool, damp climate would ruin the bricks.

An advantage of using adobe bricks is that they are inexpensive. This is because they are made of things like mud, sand, and straw. It is also good for the environment, and there is a nearly endless supply. And adobe doesn't burn easily, so you would not have to worry about your adobe-brick building burning. Disadvantages are that adobe bricks only work very well in warm, dry, hot climates. That's probably why Indians in Arizona and New Mexico used them. They worked well. Another disadvantage is that it can take a long time to build an adobe building. This is because it can take a while for all the bricks to dry in the sun. But there are more advantages than disadvantages, I think. Adobe sounds pretty good, really.



The advantages to building with adobe bricks are: it is inexpensive, doesn't require special or expensive equipment, environmentally friendly and the building material is right under our feet.

The disadvantages are: the bricks are more suited for dry climates, not suitable where it is cold and damp, and they require many weeks to dry, or cure.

Building with adobe bricks has advantages and disadvantages. One advantage is, you can find the materials almost anywhere. A disadvantage is, that sometimes you get cracks in your brick. This can happen if you don't have enough sand or straw. People have been building adobe houses for years.



Score Point 1

They are easy to make and are cheap.

Adobe is inexpensive.

Score Point 0

A mud Piy is not good to eat

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